

# Descriptive Epidemiology of Female Breast Cancer in Tianjin, China

Kexin Chen

Min He

Shufen Dong

Jifang Wang

Department of Epidemiology, Tianjin Cancer Hospital and Institute, Tianjin 300060, China.

**OBJECTIVE** To observe trends in the changes of incidence and mortality of female breast cancer patients in Tianjin, and evaluate the effect of these trends on prevention.

**METHODS** A method of descriptive epidemiology was used to comprehensively study the status of female breast cancer in Tianjin.

**RESULTS** From 1981 to 2000, the incidence rate of breast cancer in Tianjin had been increasing at the speed of 1.8 % annually, whereas the peak of the age-adjusted incidence and mortality rate expressed a mild declining trend. Follow-up study indicated that 3 and 5-year survival rates improved in various degrees.

**CONCLUSION** Early detection and diagnosis of breast cancer are very important to both increasing survival and lowering mortality from breast cancer. Preventive efforts should be promoted for women who are at high risk for breast cancer.

**KEYWORDS:** breast cancer, incidence, mortality, survival rates.

As one of the most frequent cancers among Chinese women, female breast cancer holds the second highest incidence rate in Tianjin, only lung cancer is more common and the incidence rate of breast cancer has been steadily increasing in recent years. In an attempt to learn the prevailing frequency of breast cancer in Tianjin we analyzed the epidemiologic situation in the Tianjin urban area over the last 20 years. Results are the following.

## MATERIALS AND METHODS

### Source of data

The cases were all collected from the Tianjin Cancer Registry, one of members of the IACR. The tumor registry data of Tianjin from 1981 to 2000 has been included in the V, VI and VII volumes of Cancer Incidence in five Continents issued by WHO.<sup>[1-3]</sup> Data on the incidence and death from breast cancer were obtained from registration cards for tumor incidence and for death certificates from hospitals covering the entire Tianjin urban area. The Tianjin Public Security Bureau provided us the population data, and follow-up data were offered by the Record Room, Tianjin Cancer Hospital and Institute. The morphology code of ICD-O-1<sup>[4]</sup> and the fourth digit of ICD-9<sup>[5]</sup> topography code are now used in the study.

### Statistical analysis

Standardized with world population, the incidence and mortality rates

Received March 14, 2004; accepted May 24, 2004.

Chinese Journal of Clinical Oncology

Email: COCR@eyou.com Tel(Fax): 86-22-2352-2919

were analyzed by statistical methods.

**RESULTS**

**Changing Trends of Breast Cancer Incidence and Mortality**

*Incidence trends*

During 1981~2000, 11,111 initial breast cancer cases were verified in the Tianjin urban area. After a careful study, we concluded that the incidence rate had gradually increased at the speed of 1.8 % annually, and in 20 years the incidence of breast cancer in Tianjin had increased 43% totally (Table 1).

*Mortality trends*

From the period 1981 to 2000 2,611 women died from breast cancer. In spite of the continuously rising incidence rate, the mortality rate over the last 20 years had showed a slight tendency to decline (Table 1).

**Age-adjusted Incidence Rate of Breast Cancer**

As shown in Fig.1, with increasing age, the age-adjusted incidence rate of breast cancer in Tianjin increased steadily to age 45, after which the rate plateaued. Compared with the incidence peak in the 65 age-group in the 1980s, the incidence rate dropped to a fairly younger age and in the 1990s, climaxed in the 50-age group.

**Change of Ranking Difference in Incidence and Mortality**

Table 2 indicates that, among all female malignant

tumors in Tianjin, during 1981-2000, the breast cancer incidence rate ranked second only to lung cancer. On the other hand the mortality rate from breast cancer ranked only 4th over that time period.

**Table 1. Incidence and mortality rates of breast cancer in 1981~2000, Tianjin(cases per 100,000)**

Duration(year)	Incidence		Mortality	
	Cases	Standardized rate	Cases	Standardized rate
1981	287	16.3	115	6.9
1982	339	20.8	111	6.9
1983	370	22.4	135	8.6
1984	370	21.3	122	7.3
1985	380	20.7	107	6.0
1986	478	25.5	121	6.3
1987	503	25.8	138	7.3
1988	524	26.3	120	6.0
1989	558	26.8	124	5.8
1990	593	27.9	136	6.2
1991	533	24.3	127	5.8
1992	578	25.4	140	6.2
1993	587	25.3	132	5.6
1994	583	24.5	128	5.2
1995	620	24.8	127	5.1
1996	703	27.2	148	5.6
1997	717	27.5	134	5.0
1998	792	29.2	147	5.4
1999	808	28.7	149	5.4
2000	788	27.2	150	5.1
Total	11111	25.0	2611	5.9

**Table 2. Incidence and mortality ranks of the top 10 female malignant tumors during 1993~1997 in the Tianjin urban area (cases per 100,000)**

Site	Incidence			Site	Mortality		
	Cases	Standardized rates	Rank		Cases	Standardized rates	Rank
Lung	16616	37.7	1	Lung	11343	28.0	1
Breast	11111	25.0	2	Stomach	3398	7.6	2
Largebowel	5061	11.4	3	Liver	3283	7.4	3
Stomach	4954	11.1	4	Breast	2611	5.9	4
Liver	4079	9.3	5	Largebowel	2465	5.5	5
Esophagus	2604	5.9	6	Esophagus	1998	4.5	6
Ovary	2292	5.3	7	Pancreas	1265	2.9	7
Cervical	2226	5.1	8	Cervical	1260	2.8	8
Brain, never	1725	4.2	9	Brain, never	1057	2.5	9
Pancreas	1696	3.8	10	Lymphoma	878	2.1	10

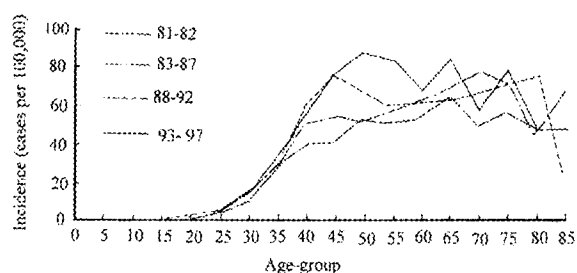


Fig.1. Age-adjusted incidence rate of breast cancer in Tianjin.

### Comparative Regional Differences in Breast Cancer Incidence among Three China Cities

A comparative epidemiological survey and analysis for breast cancer incidence was limited to a certain extent due to shortage of surveillance data for many cities throughout China, so we merely selected incidence data from Beijing, Shanghai and Tianjin over different periods for our present study.<sup>[6]</sup> As seen in Table 3, the conclusions can be drawn that the incidence trend in these three cities is the same, and that the incidence of breast cancer is increasing. Shanghai has the highest incidence rate of breast cancer and ranks the first among the female malignant cancers. The incidence rate in Tianjin is lower than in Beijing and Shanghai.

Table 3. Standardized incidence of female breast cancer during various periods in Beijing, Tianjin and Shanghai (cases per 100,000)

City	1983~1987	1988~1992	1993~1997
Beijing	22.4	25.4	27.8
Shanghai	21.2	26.5	30.1
Tianjin	21.5	24.6	25.5

### Survival Status of Breast Cancer Patients

Follow-up data were collected from female patients confirmed as having breast cancer in Tianjin Cancer Hospital and Institute during 1970~1995. The follow-up rate was as high as 98%. Results calculated for 3, 5 and 10-year survival rates over different periods demonstrated that the 3 and 5-year rates increased to various degree while the 10-year survival rate had slightly declined (Table 4).

Table 4. Survival incidence of breast cancer patients over different periods, Tianjin (%)

Duration	3-year		5-year		10-year	
	Cases	Survival rate	Cases	Survival rate	Cases	Survival rate
1970-1979	1400	79.1	1183	66.8	940	53.1
1980-1989	2967	84.6	2581	73.6	1779	50.3
1990-1995	2853	85.2	-	-	-	-

## DISCUSSION

Although at present the incidence rate of female breast cancer in Tianjin is lower than developed countries as well as Shanghai and Beijing in China, yet it has increased fairly sharply over a recent 10 year period, ranking second among all female cancers. With regard to the cause of this increase, many researches reported that the high rate has correlated with various factors such as female physiology, fertility, dietary habits, etc.<sup>[7-10]</sup> Therefore, efforts for breast cancer's prevention and treatment should not be overlooked, especially for primary prevention.

In spite of the increasing incidence rate, mortality rate of breast cancer has showed a weak declining tendency and survival rates have increased for different survival periods, which probably is based on improvement of early and accurate diagnosis, life style and methods of therapy etc. All these achievements indicate that secondary prevention has developed in recent years resulting in some progress. And it should be strengthened in the near future.

Although, in the coming ten years, the incidence of female breast cancer will likely increase in China's large cities, the improvement in diagnosis and quality of treatment will, to some degree, suppress the mortality of breast cancer. Therefore, active measures including early diagnosis, strengthening overall survey activity and surveillance particularly for high-risk populations, reasonable dietary and planned chemoprophylaxis should lower the mortality rate.

## REFERENCES

- 1 Muir CS, Waterhouse J, Mack T, et al. Cancer Incidence In Five Continents. Vol. 5. Lyon, France; International Agency for Research on Cancer. 1987; IARC Sci. Pub.
- 2 Parkin DM, Muir CS, Whelan SL, Gao YT, Ferlay J, Powell. J. Cancer Incidence In Five Continents. Vol. 6. Lyon, France; International Agency for Research on Cancer. 1992; IARC Sci. Pub.
- 3 D. M. Parkin, S. L. Whelan, J. Ferlay, et al. Cancer

- Incidence In Five Continents. Vol. 7. Lyon, France: International Agency for Research on Cancer. 1997: IARC Sci. Pub.
- 4 World Health Organization. International Classification of Disease for Oncology. First Edition. Geneva, Switzerland: WHO, 1976.
  - 5 World Health Organization. International Classification of Disease. Ninth Revision. Geneva, Switzerland: WHO, 1977.
  - 6 LI Liandi, RAO Keqin. Incidence and mortality of malignant tumor in Chinese cities and counties. Chinese Medicinal Science & Technology Press. 2001.26.
  - 7 Yuan JM, Mimi Yu, Rose RK, et al. Risk factor for breast cancer in Chinese women in Shanghai. *Cancer Res.* 1988; 48:1949-1953.
  - 8 Ronseer B, Colditz GA, Willett WC. Reproductive risk factors in a prospective study of breast cancer: the Nurse's Health Study. *Am J Epidemiol.* 1994; 139:819-835.
  - 9 Howe HL, Senie RT, Bzduch H, et al. Early abortion and breast cancer risk among women under age 40. *Int J Epidemiol.* 1989; 18: 300-304.
  - 10 Henderson BE, Ross RK, Judd HL, et al. Do regular ovulatory cycles increase breast cancer risk? *Cancer.* 1985, 56: 1206-1208.
  - 11 Newcomb PA, Storer BE, Longnecker MP, et al. Lactation and reduced risk of pre-menopausal breast cancer. *New Engl J Med.* 1994; 330: 81-85.
  - 12 Calle EE, Martin LM, Thun MJ, et al. Family history, age, and risk of fatal breast cancer. *Am J Epidemiol.* 1993; 138: 675-681.